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| 10/549,364 | 07/17/2006 | Makoto Ishida | 278285US0PCT | 5533 |
| 22850 | 7590 | 05/14/2009 | | |
| OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | | |
| EXAMINER | | | | |
| QUINTO, KEVIN V | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2826 | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/549,364

Applicant(s)

ISHIDA ET AL.

Examiner

Kevin Quinto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6 and 12-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6 and 12-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 6 and 12-15 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 6 and 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomita et al. (JP 09-089651 A).

4. In reference to claim 6, Tomita et al. (JP 09-089651 A, hereinafter referred to as the "Tomita" reference) discloses a similar structure. Figure 1 of Tomita illustrates a sensor with an epitaxially grown gamma Al_2O_3 film (2) on a semiconductor single crystal substrate (1). A single crystal Pt film (3) is on the epitaxially grown gamma Al_2O_3 film (2). A ferroelectric thin film (4) is disposed on the Pt film (3). An upper electrode (5) is disposed on the ferroelectric thin film (4). The examiner notes the limitation regarding the "ultrasonic sensor." The recitation "ultrasonic sensor" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the

intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). As for the limitation, "a treatment for adjusting a resonant frequency and an ultrasonic wave to be detected." This limitation places the claim into the form of a **product-by-process claim**:

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Thorpe*, 227 USPQ 964, 966; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 2113.

Claim 6 is not patentable over Tomita regardless of the process used to treat the semiconductor single crystal substrate, because only the final product is relevant, and not the process of making such.

5. With regard to claim 12, the semiconductor single crystal is an Si single crystal (paragraph 10).
6. With regard to claim 13, the gamma Al_2O_3 film (2) epitaxially grown (paragraph 12) on a (100) face of the semiconductor single crystal substrate (1).
7. In reference to claim 14, Tomita discloses (paragraphs 14, 23) the use of PbTiO_3 and $\text{Pb}_y\text{La}_{1-y}\text{Zr}_x\text{Ti}_{1-x}\text{O}_3$.
8. With regard to claim 15, the upper electrode (5) comprises gold black (paragraph 10).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (JP 09-089651 A) in view of Ziegler (USPN 6,238,946 B1).

11. With regard to claim 7, Tomita does not disclose the use of an SOI substrate. However Ziegler (USPN 6,238,946 B1) discloses that the use of an SOI substrate for a resonator is well known in the art (column 5, lines 17-25). The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore claim 7 is not patentable over Tomita and Ziegler.

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (JP 09-089651 A) in view of Lampe et al. (USPN 5,146,299).

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (JP 09-089651 A) in view of Beitel et al. (United States Patent Application Publication No. US 2002/0155660 A1).

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (JP 09-089651 A) in view of Asano et al. (USPN 5,621,839).

15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita et al. (JP 09-089651 A) in view of Hong (United States Patent Application Publication No. US 2002/0142488 A1).

16. With regard to claim 14, Tomita does not disclose the use of BaMg_4 , $\text{Bi}_4\text{Ti}_3\text{O}_{12}$, $(\text{Bi, La})_4\text{Ti}_3\text{O}_{12}$, BaTiO_3 , $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$, $\text{SrBi}_2\text{Ta}_2\text{O}_9$, and ZnO as the ferroelectric material. However Lampe et al. (USPN 5,146,299, hereinafter referred to as the "Lampe" reference) discloses that BaMg_4 is a known ferroelectric material (column 5, lines 36-38). Beitel et al. (United States Patent Application Publication No. US 2002/0155660 A1, hereinafter referred to as the "Beitel" reference) also discloses that $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ and $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$ are known ferroelectric materials (p. 2, paragraph 20). Furthermore Asano et al. (USPN 5,621,839, hereinafter referred to as the "Asano" reference) discloses that BaTiO_3 and ZnO are known ferroelectric materials (column 8, lines 1-4). In addition, Hong (United States Patent Application Publication No. US 2002/0142488 A1) discloses that $(\text{Bi, La})_4\text{Ti}_3\text{O}_{12}$ and $\text{SrBi}_2\text{Ta}_2\text{O}_9$ are known ferroelectric materials as well (p. 3, paragraph 40). The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65

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USPQ 297 (1945). Therefore this claim is not patentable over the above cited references.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin Quinto/
Examiner, Art Unit 2826

/Sue A. Purvis/
Supervisory Patent Examiner, Art Unit 2826